GEOQUIP

WORLDWIDE

GDALPHA ACCESSORIES
INSTALLATION MANUAL

PROVEN PERIMETER PROTECTION

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INTRODUCTION

1.1 GENERAL

This manual covers the Alpha Sensor termination and the installation of the related accessories i.e. Combo Accessory Box (GQCOMBO), Gate Loop Kits (GDGLK-A/B/C) and Gate Bypass Switches (GDGBS-A/B/C/D). For details of fault finding and testing the sensor after termination refer to QA189.

The accessories all comprise of a watertight box with the appropriate number of glands and a PCB fitted with the appropriate number of two way terminal blocks. Each box is sealed to IP66 rating and includes an integral tamper switch operating in conjunction with the sensor monitoring circuitry.

IMPORTANT
To ensure satisfactory performance of the system only accessories supplied by Geoquip Ltd. should be used. Terminations should only be carried out upon completion of the sensor installation.

1.2 EQUIPMENT REQUIRED

The following equipment is recommended to ensure that installation engineer is equipped to carry out all Alpha Sensor terminations and accessory installations.

1. Stanley type craft knife or similar.
2. Small side cutters.
3. Standard electrical screwdrivers.

ALPHA SENSOR TERMINATION

The termination procedure described in this section applies to all the accessory equipment covered in this manual.

Refer to Figure 1 when reading these instructions.

1. Carefully cut all the way round the jacket 40mm (1.5") from the end using a Stanley type craft knife or similar and then put a longitudinal slit to the end of the sensor. To avoid possible damage to the internal HDPE tubes position the longitudinal slit such that it is over the magnetic strip. Strip back the outer jacket of the sensor to expose the underlying mylar tape.

2. Cut through the clear Mylar tape at the junction of the outer sleeving and the core and remove. It may be easier to unwrap from the inner end rather than the cut end.

3. Break off the semi-circular magnetic strips at the junction of the outer sleeving to expose the HDPE tubes.

4. Cut back the copper strainer wire as close as possible to the broken end of the magnetic strips, taking care not to damage the HDPE tubes.

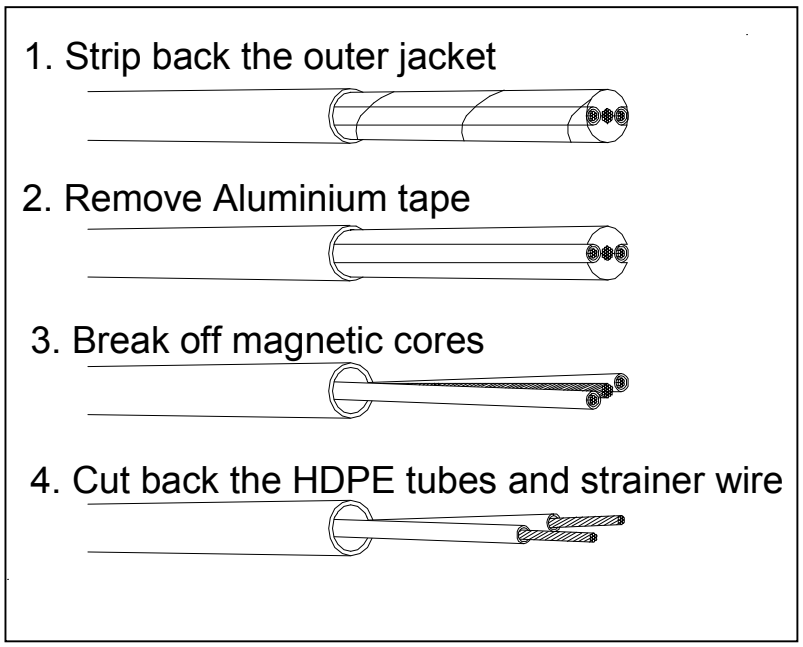

1. Strip back the outer jacket
2. Remove Aluminium tape
3. Break off magnetic cores
4. Cut back the HDPE tubes and strainer wire

Figure 1

5. Strip off 12mm (1/2") of the tubes on the two wires to facilitate connection to the termination blocks.

IMPORTANT
When undergoing the preparation for termination ensure that the HDPE tubes are cut back to expose the conductors. DO NOT pull the conductors out of the tubes otherwise they may be retracted at the other end of the sensor.

This completes the termination of the sensor at the analyser end.

GQCOMBO ACCESSORY BOX

The Geoquip part number GQCOMBO is a multi-function unit. It should be used for:

1. Terminating sensor cable

2. Acting as a junction box to join two cables.

3.1 END OF LINE TERMINATION

The use of the GQCOMBO enables easy access to end of line termination for maintenance, testing and fault finding.

The sensor cable termination is as follows:

1. Terminate the end of the sensor as described in Section 2.

2. Loosen the left hand gland on the box and pass the terminated end into the box until sufficient length of tails are available to be wired into the left hand terminal block. Tighten the gland by hand ensuring the rubber sealing ring grips the sensor jacket and not the HDPE tubes.

3. Position the box just above the line of the fence mounted sensor to allow rain water to run away from the gland and clamp the box to the fence using the mounting kit provided. The mounting bar is located across the diagonals of the box and is fixed in place by dropping the screws provided into the large holes at the corner of the box and then screwing these into the mounting bar placed on the other side of the fence. If fixing the box to a wall or other solid surface the mounting bar can be dispensed with and the box fitted directly to the surface with appropriate fixings.

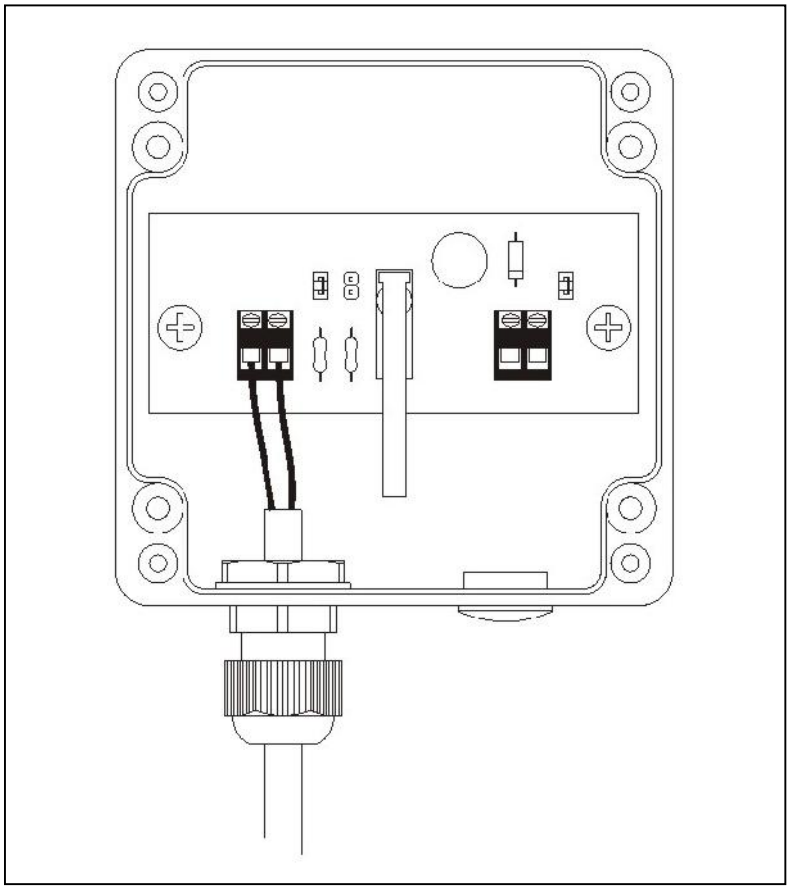


Figure 2

4. Connect the sensor tails to the left hand terminal block. See Figure 2.

5. Determine whether a 1kΩ or 4k7Ω termination is required. If using a GD4500 or GD5000 analyser a 1kΩ termination is required. If using a CentrAlert or MicrAlert analyser a 4k7Ω termination is required.

6. If a 1kΩ termination is required fit links Lk1 and Lk3.

7. If a 4k7Ω termination is required fit links Lk2 and Lk3

8. Replace the box lid, taking care not to over-tighten the lid screws and verify by listening that the tamper switch operates as the lid is screwed down. In order to attain a weatherproof seal the lid must be replaced with the correct orientation.

This completes the end of line termination.

3.2 COPING WITH SENSOR DAMAGE

In the event that damage, whether accidental or intentional, is inflicted on the sensor, the damaged section must be replaced with a new short section. This should be inserted using GQCOMBO boxes at either end to ensure proper connections. Figure 3 shows the arrangement of the damaged sensor replaced with a new section.

If sensor damage has occurred, resulting in exposure of the inner conductors to the effects of rain or moisture for a period exceeding a few days, it is advisable to cut out a section of sensor at least 5m on either side of the damage to eliminate the effects of moisture penetration due to capillary action.

The new section of sensor can be prepared off site using the following method and moved into place when completed.

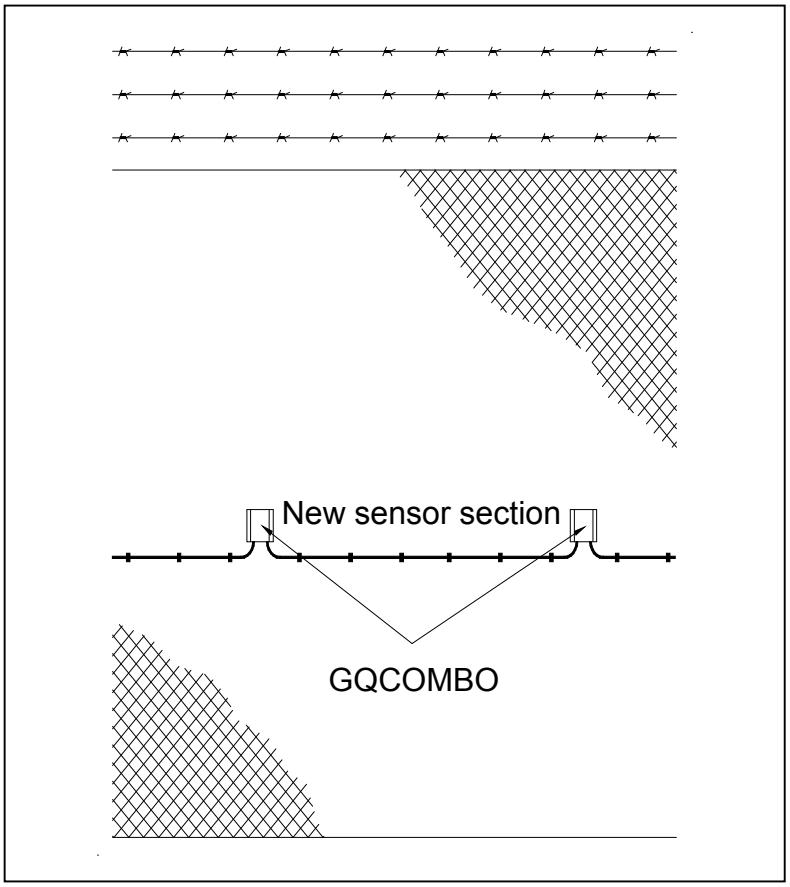


Figure 3

GQCOMBO ACCESSORY BOX

Terminate the ends of a suitable length of sensor as described in Section 2.

1. Replace the blanking plug with the appropriate plastic PG9 gland which comes with the GQCOMBO. Remove all the links fitted to the PCB.

2. Loosen the glands on the junction boxes and pass the terminated end into the box so sufficient length is available on the tails to be wired into the terminal blocks. Ensure that the sensor is passed through the correct gland to correspond to the position of the terminal block, i.e. through the left gland to connect to the left terminal block at the right hand end of the cable and vice versa at the left end. Tighten the glands by hand so that the rubber sealing ring grips the sensor jacket and not the HDPE tubes.

3. Connect the sensor tails to the terminal blocks on the PCB. Figure 4 shows sensor wired to the left hand terminal block of the GQCOMBO box.

4. Cut off the damaged section of sensor from the fence and terminate the ends of the remaining sensor in the same manner as above. To ensure that no moisture enters the open ends, this step should only be carried out immediately prior to fixing the new section.

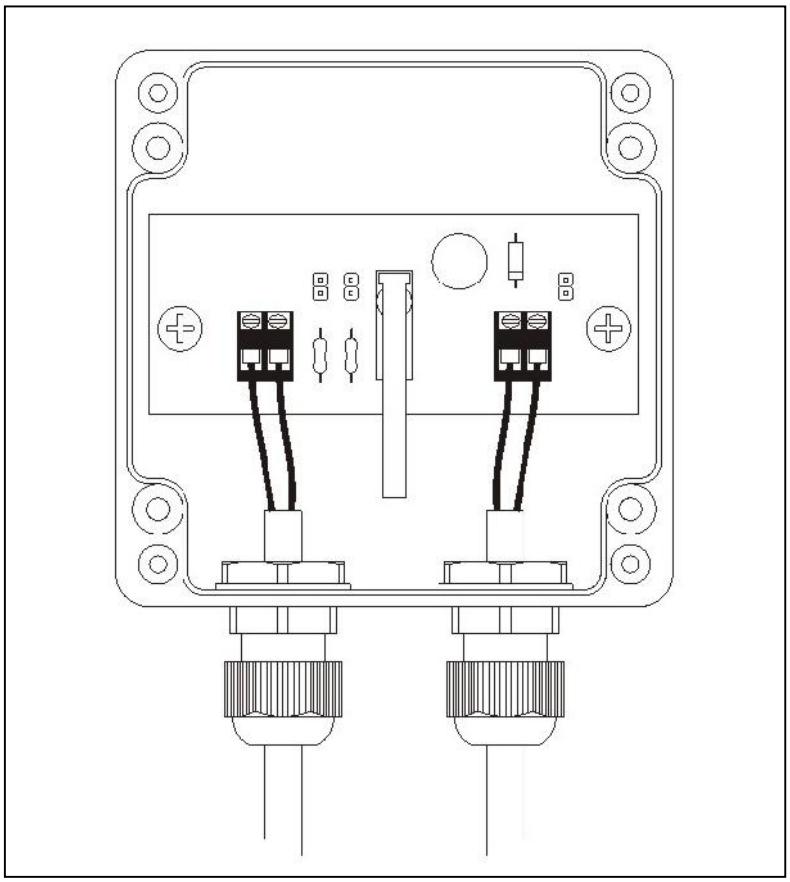


Figure 4

5. Position the boxes just above the line of the sensor to allow rain water to run away from the glands and fix to the protected surface using the mounting kit provided.

   The mounting bar is located across the diagonals of the box and is fixed in place by dropping the screws provided into the large holes at the corner of the box and screwing these into the mounting bar placed on the other side of the fence. If fixing the box to a wall or other solid surface the mounting bar can be dispensed with and the box fitted directly to the surface with appropriate fixings. Ensure that the new section of sensor is at the same height and tension the original.

6. Connect the tails of the existing sensor to the junction box terminal blocks on the PCB.

7. Replace the box lids, taking care not to over tighten the lid screws and verify that the tamper switch in each box operates by listening for the click of the switch action as the lid is screwed down. In order to attain a weatherproof seal the lid must be replaced with the correct orientation.

8. Retest the entire zone to ensure that the sensor detects simulated impact and sustained attacks.

3.3 NON-SENSITIVE SECTIONS

In many cases, there will be areas within a sensor zone where, for various reasons, it is not necessary or desirable to provide active sensor coverage. For instance, if a zone is split by a building or other obstruction, a section of dead cable can be placed in the zone and reconnected to the sensor at the other side of the obstruction. The junction between the sensor and the dead cable is made using a GQCOMBO junction box.

The GQFC-9 dead cable comprises one pair of insulated wires with a foil screen and a drain wire. The cable has a UV resistant black polythene outer sheath making it fully suitable for outdoor use. However, this cable is not suitable for direct burial. When using the GQFC-9 the screen and drain wire should be trimmed back to the junction of the outer sheath and the inner cables.

Provided that the cables are terminated correctly and moisture is excluded from the joint, almost any number of such sections can be inserted in a zone.

GDGLK GATE LOOP KITS

Most sites have gates of one form or another which interrupt the sensor zone and as such need to be protected. The gap between fence and gate is bridged using a GDGLK-A/B Gate Loop Kit for swing gates or a GDGLK-C for sliding gates.

The kits comprise of two of the boxes as shown in Figure 5 connected by a prewired flexible coiled cable which carries the sensor signal to and from the gate. This non sensitive cable is designed to withstand the flexing caused by the gate opening and closing. The box is fitted with two glands, the use of which is dependent on the gate type and the positioning of the box. Refer to the sensor installation manual QA189 for further details.

1. Terminate the ends of the sensor as described in Section 2.

2. Loosen the glands on the boxes and pass the terminated end into the box so sufficient length is available on the tails to be wired into the terminal blocks. Ensure that the sensor is passed through the correct gland to correspond to the position of the terminal block, i.e. through the left gland to connect to the left terminal block at the left hand side of the gate and vice versa at the right hand side.

   Tighten the glands by hand ensuring the rubber sealing ring grips the sensor jacket and not the HDPE tubes.

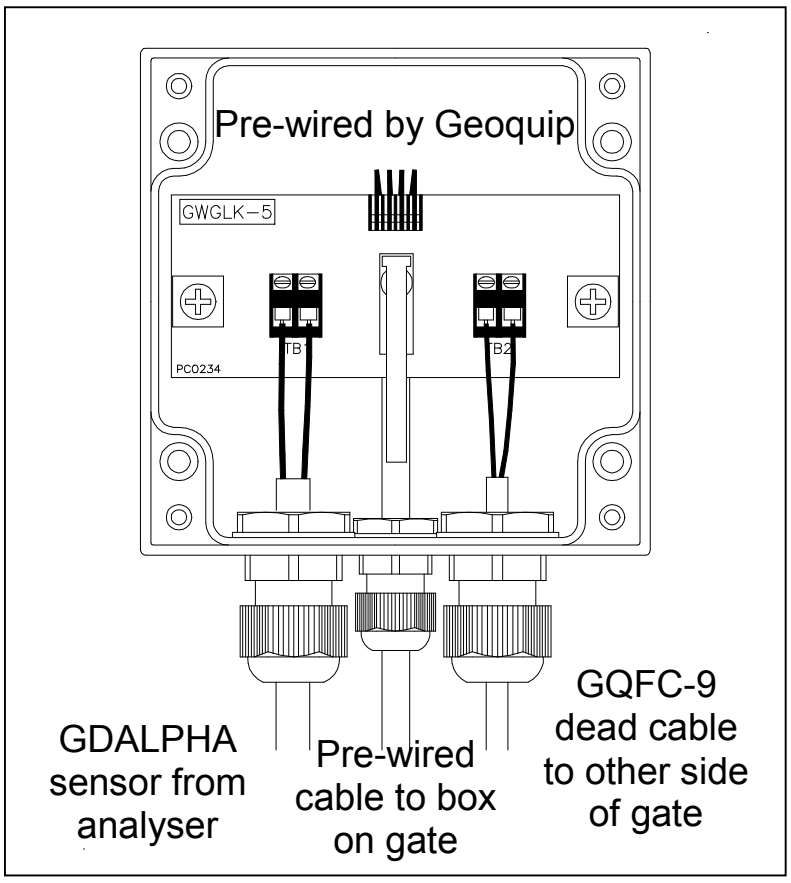


Figure 5

3. Position the boxes just above the line of the sensor to allow rain water to run away from the glands and fix to the fence using the mounting kit provided. The mounting bar is located across the diagonals of the box and is fixed in place by dropping the screws provided into the large holes at the corner of the box and screwing these into the mounting bar placed on the other side of the fence. If fixing the box to a wall or other solid surface the mounting bar can be dispensed with and the box fitted directly to the

surface with appropriate fixings.

4. Connect the sensor tails to the terminal blocks on the PCB.

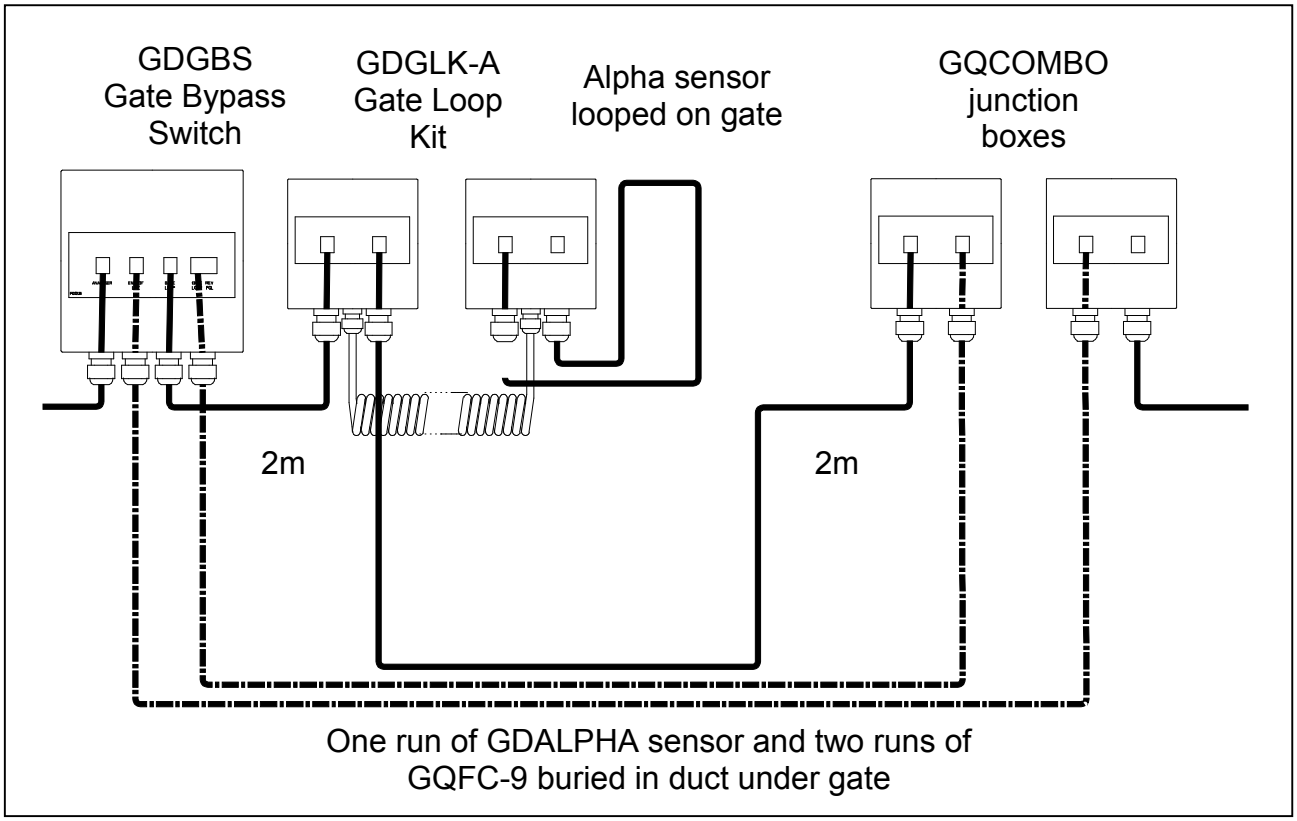
5. Replace the box lids, taking care not to over tighten the lid screws and verify that the tamper switch in each box operates by listening for the click of the switch action as the lid is screwed down. In order to attain a weatherproof seal the lid must be replaced with the correct orientation, i.e. with the chamfered edges vertical.

GDGBS GATE BYPASS SWITCHES

The GDGBS Gate Bypass Switches provide the facility to disable the sensor in the area of a gate to allow the gate to be operated without generating an alarm. They are available in two versions, either the GDGBS-A/C which is a locally key operated switch or the GDGBS-B/D which is remote relay operated switch powered by 12V dc signal. Refer to the sensor installation manual QA189 for further details.

1. Terminate the ends of the sensor as described in Section 2.

2. Loosen the glands on the box and pass the sensor and feeder cable ends into the box so sufficient length is available on the tails to be wired into the terminal blocks. Refer to Figures 6 and 7 to determine which terminals, i.e. the small rectangles on the PCBs when the cables end, require to be configured with either Alpha Sensor or GQFC-9 dead cable. Figure 7 shows the Gate Bypass Switch on a single leaf or sliding gate and Figure 8 shows it on a double leaf or sliding gate. In both figures the Sensor is the thick solid line and the feeder cable is the thick chain dotted line. Tighten the glands by hand so that the rubber sealing ring grips the outer jacket and not the tails.



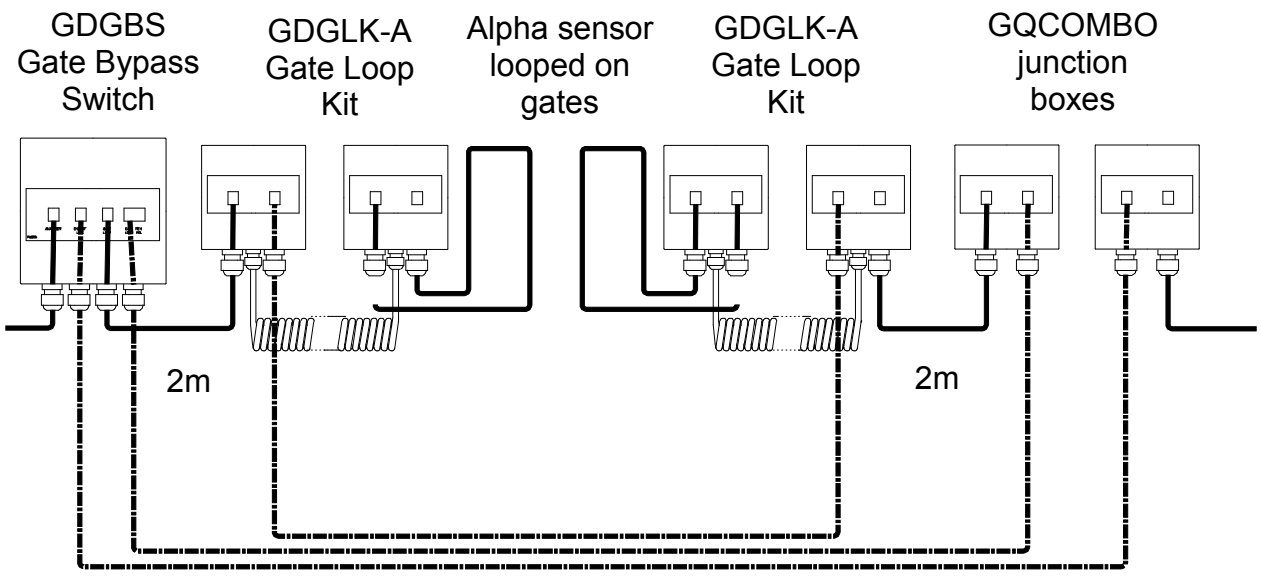
One run of GDALPHA sensor and two runs of
GQFC-9 buried in duct under gate

3. Position the boxes just above the line of the sensor to allow rain water to run away from the glands and fix to the fence using the mounting kit

provided. The mounting bar is located across the diagonals of the box and is fixed in place by dropping the screws provided into the large holes at the corner of the box and screwing these into the mounting bar placed on the other side of the fence. If fixing the box to a wall or other solid surface the mounting bar can be dispensed with and the box fitted directly to the surface with appropriate fixings.

4. Connect the sensor tails to the terminal blocks on the PCB.

5. Replace the box lids, taking care not to over tighten the lid screws and verify that the tamper switch in each box operates by listening for the click of the switch action as the lid is screwed down. In order to attain a weatherproof seal the lid must be replaced with the correct orientation, i.e. with the chamfered edges vertical.



Three runs of GQFC-9 buried in duct under gates

Figure 7

USING GDALPHA-FAC GLANDED BOXES

For accessory boxes fitted with the larger glands to accommodate the sensor in flexible conduit the following procedure should be used in order to hold the flexible conduit and Sensor securely.

1. Ensure that 75mm (3") of the sensor protrudes from the end of the flexible conduit when the conduit is pulled tight.

2. Terminate the end of the sensor as described in Section 2.

3. Remove the retaining nut and slip it onto the flexible conduit with the screw thread facing towards the end of the sensor. Place the retaining ring 15 mm (3/4") from the end of the conduit

4. Push the sensor through the gland whilst pushing the flexible conduit end into the gland until the retaining ring meets the edge of the gland.

5. Tighten up the retaining nut.

6. Continue with the installation of the accessory box as described previously in the appropriate section.